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Subject:	Accum in GW discharge zones
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I talked with Marc at SETAC and he is going to send me some literature on this. Apparently, as Jeremy had indicated, the in-situ Lumbriculus test looks like good way to go - there are standardized published methods on how to do this. I would like to dig into this liturature and the model they have developed.

-Jennifer

Greenberg, M., G.A. Burton, Jr., C.D. Rowland. 2002. Optimizing Interpretation of In Situ Effects of

Riverine Pollutants: Impact of Upwelling and Downwelling. Environ. Toxicol. Chem. 21:289–297.

Burton GA Jr., Greenberg MS, Rowland CD, Irvine CA, Lavoie DR, Brooker JA, Eggert LM, Raymer DFN, McWilliam RA. 2005. In situ exposures using caged organisms: a multi-compartment approach to detect aquatic toxicity and bioaccumulation. Environ. Pollut.134:133-144.

MODELING BIOACCUMULATION IN SYSTEMS WHERE HYDROLOGIC CONDITIONS AFFECT THE BIOAVAILABILITY OF SEDIMENT-ASSOCIATED CONTAMINANTS.

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In recent years we have studied the influence of upwelling and downwelling conditions on sediment toxicity in stream systems. Vertical hydraulic gradients from -0.01 to 0.14 cm cm-1 reduced or increased, respectively, the bioavailability of contaminant stressors to in situ exposed Lumbriculus variegatus and Hyalella azteca. Laboratory studies were conducted with two model contaminants: the PAH fluoranthene and the herbicide trifluralin. Toxicokinetic parameters were determined for L. variegatus and H. azteca exposed to both sediments and water that were spiked with the test compounds. Uptake clearance rates ranged from 0.013-0.07 g dry sediments g-1 h-1 and 75.4-199 ml water g-1 h-1, and elimination rates were 0.043-0.219 h-1. Desorption of the bioavailable fraction of the chemicals from sediments of differing organic contents was also measured and ranged from 0.41-18.95 d. Information from these field and laboratory investigations was combined to construct a bioaccumulation model that would accurately predict expected tissue concentrations at sites containing contaminated sediments. The primary model parameters included stream bed hydrology, species-specific toxicokinetic constants and contaminant desorption behavior. Modeled tissue residues were compared to the results of two case studies. In general, the model predicted field observations within an order of magnitude and thus represents a promising tool that can reduce resource expenditures associated with site assessments.